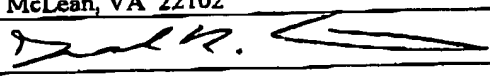
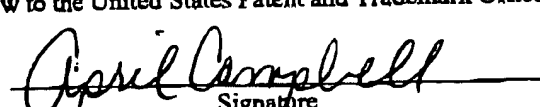


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| TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i> | Application Number | 09/504,782 |
| | Filing Date | February 15, 2000 |
| | First Named Inventor | Masahiro KUME et al. |
| | Group Art Unit | 2828 |
| | Examiner Name | Delma R. FLORES RUIZ |
| Total Number of Pages in This Submission | Attorney Docket Number | 740819-337 |

| ENCLOSURES (check all that apply) | | |
|--|---|---|
| <input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Declaration and Power of Attorney <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ | <input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Application Data Sheet <input type="checkbox"/> Request for Corrected Filing Receipt with Enclosures <input type="checkbox"/> A self-addressed prepaid postcard for acknowledging receipt <input type="checkbox"/> Other Enclosures (Please identify below) |
| Remarks <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees required or credit any overpayments to Deposit Account No. 19-2380 (740819-337) for the above identified docket number. | | |

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| SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT | |
|--|--|
| Firm or Individual name | <u>Donald R. Studebaker</u> Nixon Peabody LLP 8180 Greensboro Drive Suite 800 McLean, VA 22102 |
| Signature |  |
| Date | June 17, 2003 |

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| June 17, 2003 Date |  Signature <u>April Campbell</u> Typed or printed name |

Docket No.: 740819-337

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)

Masahiro KUME et al.)

Serial No. 09/504,782)

Filed: February 15, 2000)

For: SEMICONDUCTOR LASER)
DEVICE, OPTICAL DEVICE)
APPARATUS AND OPTICAL)
INTEGRATED UNIT)

Group Art Unit: 2828

Examiner: Delma R. FLORES RUIZ

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April Campbell

RESPONSE TO THE FINAL OFFICE ACTION

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Dear Sir:

In response to the Examiner's Final Office Action mailed March 31, 2003, please consider the following remarks in connection with the above-identified application. Initially, the Applicants wish to thank Examiner Flores for the courtesies extended to the Applicants' representative during the telephone interview of April 28, 2003.

During the interview, the Applicants' representative noted that the Furukawa et al ('977) reference relied upon by the Examiner as the basis for the rejection of the claims, under § 102(b), did not appear to teach the $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer formed between the substrate and the first cladding layer. Such a layer was not identified by the

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Examiner in the final Office Action by reference to a specific column or line or an element of the figures of the Furukawa et al disclosure as were the other elements Furukawa et al which are asserted by the Examiner to teach the other elements of the claimed invention.

The Applicants' representative also reviewed, with the Examiner, the teachings of the Furukawa et al reference to illustrate the lack of a teaching of the $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer of a first conductivity type. After the discussion of the Furukawa et al reference, Examiner Flores admitted that she did not fully understand the teachings of the Furukawa et al as they relate to the presently claimed invention, and that the Furukawa et al does not teach the $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer of a first conductivity type of the instant claims. In light of that admission, the Applicants request the following.

In view of the admitted failure of the Examiner to fully appreciate the teachings of the Furukawa et al reference, it is respectfully requested that the finality of the March 31, 2003 Office Action be withdrawn since a "clear issue" has not been developed between the Examiner and the Applicants as is specifically required for making a rejection "final" according to MPEP Chapter 706.07

Turning to the instant rejections of record, with regard to the Examiner's formality rejection, under § 112 (second paragraph), the Applicants request clarification of the rejection since both claims 1 and 4 recite:

an active layer, which is made of $\text{In}_y\text{Ga}_{1-y}\text{N}$ and is formed over the first cladding layer;...

wherein an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer...is formed between the substrate and the first cladding layer...and $x \geq y$ in the composition of In.

Therefore, there is clear antecedent basis for the presence of both x and y stoichiometric mole fraction amounts in the composite layered device. Further, the instant specification, at least at page 19, lines 3-5, clearly expresses the relationship " $x \geq y$ " and further, page 27, lines 10-15, by way of an example states "a p-type InGaN spontaneous-emission-absorbing layer 15D with an energy gap smaller than that of the active layer 17" which clearly illustrates that the mole fraction of x in the

composition of layer 15D is larger than the mole fraction of y in the composition of the layer 17. If the Examiner is of the opinion that some other language would more clearly express this relationship of " $x \geq y$ " in the composite layered device at the last line of claims 1 and 4, then the Examiner is requested to contact the Applicants' undersigned representative to discuss such language. Otherwise, without some further clarification of the § 112 (second paragraph), the language of the current claims 1 and 4 are asserted to provide a clear understanding of the " $x \geq y$ " relationship to one of ordinary skill in the prior art such that that it would be clear to one of ordinary skill in the prior art that the Applicants had possession of the subject matter of claims 1 and 4 at the time of the invention.

With regard to the Examiner's rejection of:

Claims 1-6, under 35 U.S.C. 102(b), as being anticipated by the teachings of Furukawa et al '977,

this rejection is respectfully traversed. Since the interview of April 28, 2003 has established the Examiner's misunderstanding the teachings of the Furukawa et al reference, the Applicants reiterate their reasons for traversal of the § 102(b) rejection set forth in the Amendment of December 26, 2002. The following is repeated only for emphasis of the differences in the teachings of Furukawa et al from the presently claimed invention.

The presently claimed invention, i.e., amended independent claims 1 and 4, recites an essential feature of the claim 1 invention as follows:

an active layer, which is made of $\text{In}_y\text{Ga}_{1-y}\text{N}$ and is formed over the first cladding layer; and...

wherein an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer of the first conductivity type is formed between the substrate and the first cladding layer, and $x \geq y$ in the composition of In . (emphasis added)

further for the claim 4 invention the essential feature is:

an active layer, which is made of $\text{In}_y\text{Ga}_{1-y}\text{N}$ and is formed over the first cladding layer;...

wherein an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer of the second conductivity type is formed between the second cladding layer and the electrode, and $x \geq y$ in the composition of In. (emphasis added)

By providing the claimed sequence of an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer, a first cladding layer, an $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer, and a second cladding layer for claim 1, the effect of spontaneous emission from the active layer being absorbed by the $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer can be achieved which avoids the problem of the mixing of spontaneous emissions with the laser radiation, as discussed in the specification, page 4, line 15, to page 5, line 22.

As noted in the Applicants' Amendment of December 26, 2002 and emphasized during the April 28th interview, Furukawa et al (column 4, lines 32-64; column 10, lines 10-12) teach only the active layer 26, and an In-included nitride semiconductor layer is not present in the device of the patentees. That is, each of the first buffer layer 14, n-type buffer layer 22 and p-type buffer layer 30 that form the semiconductor layer indicated by the Examiner (and allegedly functions as a spontaneous-emission-absorbing layer) are composed of only GaN. Further, Furukawa et al disclose that no **In** is included nitride semiconductor layer provided between the substrate 12 and the first cladding layer 24.

Therefore, as pointed out during the interview of April 28, 2003, Furukawa et al is different from the present invention in which, besides the active layer, an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer is also interposed between the substrate and the first cladding layer. Further, since Furukawa et al fail to disclose that the $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer is interposed between the substrate and the first cladding layer, Furukawa et al also fail to teach or suggest that " $x \geq y$ " relationship of the presently claimed invention.

Finally, similar arguments for traversing the rejection of claims 4-6, under § 102(b), have been made in the Amendment of December 26, 2002, and are therefore repeated here by reference thereto.


Having responded to each rejection set forth in the outstanding Office Action, it is submitted that claims 1-6 are in condition for allowance. An early and favorable Notice of Allowance is respectfully solicited. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or

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Docket No. 740819-337

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more of the above claims, the Examiner is courteously requested to contact Applicants' undersigned representative.

Respectfully submitted,

By: 
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